

**EFFECTIVENESS OF MESOTHERAPY IN PAIN MANAGEMENT IN PATIENTS WITH FIBROMYALGIA AND MIGRAINE**

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Turkey.drfatmahorasan@hotmail.com**SUMMARY**

Objective: Mesotherapy pain management has become a more commonly used method in the clinic. It covers the extent of the performance of mesotherapy applications on pain in patients with fibromyalgia and migraine, including these symptoms, and the patient characteristics and duration. **Method:** A total of 152 randomly selected female cases with rejuvenation and pain problems were included in the study. Mesotherapy was applied to have four different diagnostic groups, namely fibromyalgia, migraine, arthralgia and rejuvenation. VAS (Visual Analogue Scale) scale of pain intensity and intensity of the patients was used. **Results:** The ages of the cases ranged from 37 to 68, and the mean age was 55.19 ± 7.31 . Changes in the VAS scores of the study participants were determined. A widely directional relationship was not found between the changes in VAS scores and their age, weight, height, BMI measurements, and income. The changes in the VAS scores of the participants were determined according to the diagnosis, session and side effects categories. Values showing the variation according to the sessions in the changes in VAS scores. The VAS changes of the cases in the 3rd session are higher than expected in the 2nd session ($p=0.007$). Between the changes in VAS scores and the mesotherapy sessions, the positive direction (the higher the number of sessions, the greater the VAS difference) was the view of the targeted relationship as the observer ($r=0.481$; $p<0.015$). **Conclusion:** As a result of the mesotherapy application, a decrease in the level of efficiency was observed in the VAS pain scores during the sessions. He saw the weight of mesotherapy care as effective especially in fibromyalgia and migraine patients. Also, Sevens can be used with vaccine and less impact on the gastrointestinal tract.

KEYWORDS: Mesotherapy, Pain, VAS, Fibromyalgia, Migraine.**ENTRANCE**

Conventional pharmacological treatments to relieve pain and inflammation include systemic use of drugs such as nonsteroidal anti-inflammatory drugs (NSAIDs), paracetamol, and corticosteroids. However, the main disadvantage of these drugs is the side effects observed.^[1] While the use of NSAIDs mainly affects the gastric mucosa and kidney homeostasis negatively, long-term use of corticosteroids may cause problems such as hypertension, diabetes, gastric ulcer and psychiatric disorders.^[2-4] The use of NSAIDs and corticosteroids, especially in elderly patients with chronic diseases, increases the risk of drug interactions and creates the need for alternative clinical treatment.^[5]

One of the applications for reducing toxicity from drugs includes the local application of drugs. Mesotherapy is one of these applications, and it was first applied as an analgesic in rheumatological disorders by the French doctor Michel Pistor in the 1950s.^[6] Mesotherapy is a technique that provides minimal invasion and includes

subcutaneous injection of bioactive substances such as plant extracts and NSAIDs into the mesoderm layer under the skin. Mesotherapy can be considered as a complementary and alternative medical practice.^[7,8]

Mesotherapy is mostly used in osteoarticular pathologies, low back pain and pain management, as well as in cosmetic applications for cellulite and fat accumulation recently.^[9-12] Studies have shown the effectiveness of mesotherapy. It has been shown that mesotherapy can reduce pain in the cervical and lumbar regions by 50%.^[13] In another study, mesotherapy and systemic applications of NSAIDs and corticosteroids were shown to have similar efficacy for acute low back pain.^[14] It can also be used as an effective treatment method in the treatment of musculoskeletal pain.^[15]

One of the main advantages of mesotherapy is that the drugs are administered locally without reaching high systemic concentrations, the drug acts with a slow diffusion, and the side effects are minimized. In this way,

it is aimed to achieve a similar effect with less toxicity.^[16] In addition, the combination of mesotherapy and systemic therapy may create a synergistic effect. Studies showing the clinical benefit of mesotherapy in different pathologies are needed.^[16]

In this study, the effectiveness of mesotherapy applications for pain management in patients with fibromyalgia and migraine and its relationship with patient characteristics were investigated.

MATERIAL- METHOD

facts

In our private obstetrics and mesotherapy clinic between February – June 2022; A total of 152 randomly selected female cases with rejuvenation and pain problems were included. Mesotherapy consent documents were obtained from all cases and detailed information about the procedure was given. Patients with normal hemogram and neutrophil lymphocyte ratio in blood tests were included in the study. The chronic diseases of the cases were questioned and it was seen that they did not have any chronic comorbidities. Covid vaccines of the cases were complete. There was no drug use other than painkillers. The patients who came for fibromyalgia were diagnosed. Pain patients used different painkillers per orally and intramuscularly.

Mesotherapy Application

Mesotherapy was applied to patients in four different diagnosis groups. Drug applications for fibromyalgia patients have been made in various combinations: i) procaine prilocaine hydrochloride (Citanest, Aspen) (20 mg/ml, 1/4 diluted 1-2 cc applied), pentoxiphylline (Sanofi-Aventis) (20 mg/ml, 1/4 diluted 1-2 cc applied); ii) procaine (20 mg/ml, 1/4 diluted 1-2 cc administered), diclofenac (Dicloron, Deva) (25 mg/ml, 1/4 diluted 1-2 cc administered); iii) tenoxicam (Oksamen, Mustafa Nevzat İlaç Sanayi), procaine (administration same); pentoxiphylline (application is the same); iv) tenoxicam (same application), procaine (same application), diazepam (Diazem, Deva drug). Pentoxiphylline (same application), jetcaine hydrochloride 2 ml + epinephrine base in application for face and neck hand rejuvenation. adeka drug - 1/4 diluted and 1-2 cc application, botox allergan - (onabotulinumtoxinA) 1/4 diluted 1-2 cc, 200 iu was used. For migraine, botox (Masport 500, clostridium botulinum toxin type A, MDPC) was diluted with 5 cc of sf from the box, 250 iu, procaine (same application), pentoxyfillin (same application) was used. Tenoxicam (same application), procaine (same application), pentoxiphylline (same application) were used for arthralgia.

Before mesotherapy application, antihistaminic oral TB (Zyritec 10 mg tb, cetirizine dihydrochloride, ucb farma drug) and anestol pomade (5% lidocaine, Sandoz İlaç), anesthetic spray lidocaine (10% lidocaine hcl, Naturel Medikal Farma) were used.

For facial rejuvenation - botox - glabella, frontal region, both eyes were applied to the so-called lateral crow's feet. Procaine-pentoxiphylline was applied below the eye level and on the region descending from the labial sulcus and mouth corners to the mandible.

For arthralgia-fibromyalgia, the region located on the side of the neck and the upper part of the shoulder, that is, the region of the bilateral superior trapezius muscles, was treated. In addition, for the same purpose, the application was made in the lumbar 5-6 region, in the lumbosacral region.

30 g x30 mm x13 mm (BD microlance) was used as mesotherapy needle. Mesotherapy session intervals are 3 weeks. A total of 3 mesotherapy sessions were applied. Oral cephalosporin (cefixime suprax, 400 mg, 1x1, 3 days, Eczacıbaşı) was given for 3 days after the procedure for prophylaxis of infection. It was recommended to avoid water baths and saunas for 24 hours after the procedure.

VAS (Visual Analog Scale) Measurement

The pain intensity and intensity of the patients were determined using a 10 cm long millimetric VAS scale. Values ranged from 0 (no pain) to 10 (most severe pain) on this scale. VAS scores were determined according to the values given by the patients.

Statisticals

NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used while evaluating the study data. The conformity of the quantitative data to the normal distribution was tested with the Shapiro-Wilk test and graphical examinations. The Mann-Whitney U test was used for comparisons between two groups of quantitative variables that did not show normal distribution. Wilcoxon signed-ranks test was used for within-group comparisons of quantitative variables that did not show normal distribution. Fisher-Freeman-Halton exact test was used to compare qualitative data. Spearman correlation analysis was used to evaluate the relationships between quantitative variables. Statistical significance was accepted as $p < 0.05$.

RESULTS

The study was carried out in our private obstetrics and mesotherapy practice between February – June 2022; conducted with a total of 52 female cases. The descriptive features of the cases are given in Table 1. The ages of the cases ranged from 37 to 68, with a mean age of 55.19 ± 7.31 . Patients diagnosed with arthralgia, fibromyalgia, fibromyalgia+migraine, migraine and patients who want to receive face and neck hand rejuvenation application were included in the study.

Table 1: Distribution of Descriptive Characteristics.

age	<i>average±Ss</i>	55,19±7,31
	<i>Median (Min-Max)</i>	56 (37-68)
weight (kg)	<i>average±Ss</i>	71,81±2,99
	<i>Median (Min-Max)</i>	70 (67-82)
tall (cm)	<i>average±Ss</i>	159,53±3,38
	<i>Median (Min-Max)</i>	160 (153-168)
BMI (kg/m²)	<i>average±Ss</i>	28,24±1,39
	<i>Median (Min-Max)</i>	28 (25,3-31,2)
income(1000 tl/month)	<i>average±Ss</i>	10,13±2,85
	<i>Median (Min-Max)</i>	10 (5-18)
Education status	primary	11 (23,9)
	High scholl	23 (50,0)
	Univercity	12 (26,1)
diagnosis	Artralgia	1 (1,9)
	Fibromiyalgia	28 (53,8)
	Fibromiyalgia+Migrain	3 (5,8)
	Migrain	4 (7,7)
Session	rejuvanation	16 (30,8)
	Session 1	5 (9,6)
	Session 2	40 (76,9)
	Session 3	7 (13,5)
Side effect	no	46 (88,5)
	There is	6 (11,5)

The weight of the participants in the study varied between 67 and 82 kg, and the average weight was determined as 71.81±2.99 kg. The height measurements of the cases ranged from 153 to 168 cm, and the mean height was 159.53±3.38 cm. The BMI measurements of the participants ranged between 25.3 and 31.2 kg/m², and the average BMI value was determined as 28.24±1.39 kg/m². The incomes of the participants in the study vary between 5 and 18 thousand TL.

the average income is 10.13±2.85 thousand TL. When the educational status is examined, 23.9% (n=11) of the cases have primary education, 50% (n=23) high school, 26.1% (n=12) university.

The changes in the VAS scores of the participants were determined. No statistically significant correlation was found between the changes in VAS scores and their age, weight, height, BMI measurements and income (Table 2) (p>0.05).

Table 2: Relationship between VAS Change and Demographic Characteristics.

	VASΔ	
	r	p
age	-0,111	0,525
weight (kg)	-0,159	0,361
tall (cm)	0,183	0,301
BMI	-0,300	0,085
income	-0,088	0,616

r: Spearman Correlation Coefficient

The changes in the VAS scores of the participants were determined according to the diagnosis, session and side effects categories. It was observed that the changes in VAS scores differed significantly according to the

sessions. The VAS changes of the cases in the 3rd session were found to be statistically significantly higher than those in the 2nd session (Table 3, Figure 1) (p=0.007; p<0.01).

Table 3: Evaluation of VAS Change.

		VASΔ		p
		<i>average±Ss</i>	<i>Median (Min-Maks)</i>	
•diagnosis	Artralgia (n=1)	-5,00±0,00	-5 (-5- -5)	-
	Fibromiyalgia (n=27)	-6,37±1,45	-6 (-9- -4)	
	Fibromiyalgia+Migren (n=3)	-6,00±1,00	-6 (-7- -5)	

	Migraine (n=4)	-6,00±0,82	-6 (-7- -5)	
*session	Session 1 (n=3)	-5,33±0,58	-5 (-6- -5)	^a 0,007**
	Session 2 (n=27)	-6,07±1,30	-6 (-9- -4)	
	Session 3(n=5)	-7,80±0,45	-8 (-8- -7)	
•side effect	No (n=31)	-6,35±1,38	-6 (-9- -4)	-
	There is (n=4)	-5,50±0,58	-5,5 (-6- -5)	

- Since the number of observations was insufficient, they were not included in the comparison.
- aMann Whitney U Test
- ^aMann Whitney U Test

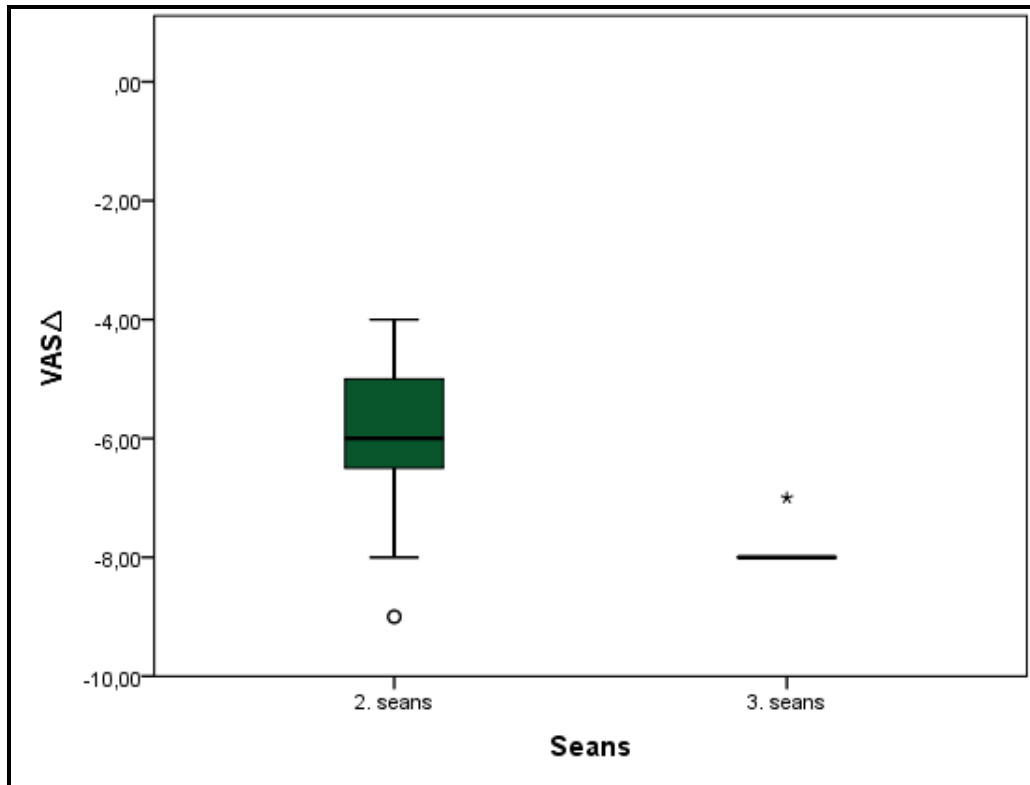


Figure 1: Change in VAS measurements according to sessions.

A statistically significant positive correlation was found between the number of mesotherapy sessions and initial VAS measurements of the participants ($r=0.438$; $p<0.05$). Those with high initial VAS measurements also have more mesotherapy sessions. There is no significant relationship between the VAS scores of mesotherapy sessions and after ($r=-0.213$; $p>0.05$).

A statistically significant correlation was found between the changes in VAS scores and the mesotherapy sessions, in a positive direction (the VAS difference of the more sessions is greater) ($r=0.481$; $p<0.015$).

Table 4: Evaluation of VAS Measurements According to the Number of Mesotherapy Sessions.

	Number of Mesotherapy Sessions	
	r	p
VAS ago	0,438	0,012*
VAS after	-0,213	0,235
VAS Change scor(Δ)	0,481	0,005**

r: Spearman Correlation Coefficient

DISCUSSION AND CONCLUSION

In this study, it was observed that mesotherapy was effective in patients who received mesotherapy for the treatment of fibromyalgia, arthralgia, migraine, fibromyalgia+migraine, and there were significant

decreases in VAS scores indicating the severity of pain. In addition, when the changes in VAS scores between the sessions were examined, a significant difference was found between the 2nd and 3rd sessions. In addition, it

was observed that the change in VAS scores increased with the increase in the number of sessions.

In previous studies, the application of drugs through mesotherapy and their systemic application were compared and it was shown that the application through mesotherapy was at least as effective as systemic applications. Menkes et al. showed that diclofenac administration via mesotherapy is as effective as oral administration for tendinitis.^[10] NSAIDs and corticosteroids show many side effects. More side effects are seen in the gastrointestinal, renal and cardiovascular systems, especially in the elderly patient group.^[1-4] In the application of mesotherapy, similar effects are seen with the systemic application, and the drug doses are at least 50%.

In the application of mesotherapy, a similar effect is observed with the systemic application, as well as the drug doses are reduced by at least 50% and the risk of toxicity is reduced. In the study of Constantino et al. with 84 patients, ketoprofen and methylprednisol were administered with mesotherapy in one group and systemic therapy in the other group in the treatment of acute low back pain. There was no difference between the two groups in terms of VAS scores and quality of life both after treatment and at the end of 6 months. In addition, in mesotherapy, the drug dose was used at a low dose of more than 50%.^[14] Similarly, Di Cesare et al., in their study involving 62 patients, showed that 4-week acupuncture mesotherapy treatment was effective in chronic low back pain.^[17] In a recent study, Ronconi et al examined the application of mesotherapy for chronic low back pain in 101 patients. One group of patients was treated with diclofenac with mesotherapy, while the other group was treated with lysine acetylsalicylate. There was a significant decrease in VAS pain and disability scores in both groups that underwent mesotherapy. It has also been observed that diclofenac administration is more effective.^[18]

In another study showing the clinical benefit of mesotherapy, Saggini et al. included 117 patients in their study in which they compared the effectiveness of mesotherapy applications with systemic therapy in patients with osteoarthritis-related anserine bursitis. In this study, patients were treated with diclofenac for 3 weeks by mesotherapy or systemically, and their VAS scores and quality of life were followed up to 90 days. VAS scores decreased significantly in both groups. Interestingly, it was observed that the hypochoic area caused by anserine bursitis on ultrasonography decreased only in the mesotherapy group.^[19] improvement was observed. In addition, at the end of the 8-week follow-up, the osteoarthritis index was found to be better in the mesotherapy group.^[20] These studies show that mesotherapy is not only as effective as systemic therapy in the osteoarthritis patient group, but also shows that it gives better results than systemic therapy in some parameters.

Fibromyalgia and migraine patients constitute the majority of the patients included in our study. There are few studies on the effect of mesotherapy on migraine and fibromyalgia. It is thought that more mesotherapy application studies are needed for these patient groups. Akbaş et al. compared the mesotherapy or systemic application of dexketoprofen in a study involving 148 migraine patients in 2021. VAS pain scores decreased from 8 to 4 and 5, respectively, in both groups that underwent mesotherapy and systemic administration. The rate of analgesic use and re-admission to the emergency department was observed to be lower in the mesotherapy group than in the systemic therapy group.^[21] In the study of Suarez and Muniz including 22 female fibromyalgia patients, it was observed that lidocaine administration with mesotherapy resulted in a significant decrease in VAS pain and functional disability scores.^[22] In our study, we used 1.5 times the classical dose used in mesotherapy drugs, especially for procaine. For this reason, the number of sessions required by patients may have decreased.

As a result, 52 female cases were included in our study and up to 3 sessions of mesotherapy were applied to these cases. As a result of the application, a significant decrease was observed in VAS pain scores during the sessions. It was observed that the VAS pain scores changed more with the increase in the number of sessions. It is thought that especially in fibromyalgia and migraine patients, mesotherapy application can be used as an alternative to systemic therapy in pain management with similar effectiveness and less side effects on the liver, kidney and gastrointestinal system.

Limitations of the Study

The relatively small number of patients included in the study is one of the limitations of the study. Similar studies involving larger numbers of patients should be conducted. Another limitation of the study is the follow-up period. The findings should be supported by studies conducted for a longer period of time, in which the results of the study were followed for a longer period of time. In addition, another limitation of the study is the lack of further evaluation and analysis of disability and quality of life in addition to the VAS scale, and supportive studies should be conducted in this regard.

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